

**CITY OF NEWTON  
CONTRIBUTORY RETIREMENT SYSTEM**

Actuarial Valuation Report

January 1, 2010

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**Report Summary:**

<b><u>Highlights</u></b>	<b><u>January 1, 2009</u></b>	<b><u>January 1, 2010</u></b>
<b><u>Contributions</u></b>		
Funding Schedule FY 2011	\$15,029,827	\$15,029,827
Funding Schedule FY 2012	15,587,888	16,252,351
<b><u>Funded Ratios</u></b>		
GAS No. 25	56.9%	55.0%
<b><u>Participants</u></b>		
Actives	1,740	1,759
Retirees and Beneficiaries	1,134	1,146
Inactives	562	533
Disabled	<u>147</u>	<u>153</u>
Total	3,583	3,591
<b><u>Payroll</u></b>		
Payroll of Active Members	\$82,013,624	\$83,843,673
Average Payroll	47,134	47,666
<b><u>Normal Cost</u></b>		
Employer	3,136,792	3,185,247
Employee	<u>6,745,990</u>	<u>6,958,246</u>
Total	9,882,782	10,143,493
<b><u>Actuarial Accrued Liabilities</u></b>		
Actives	201,310,860	204,215,255
Retirees, Beneficiaries, Disabilities and Inactives	<u>241,698,747</u>	<u>257,888,433</u>
Total	443,009,607	462,103,688
<b><u>Actuarial Value of Assets</u></b>	<b><u>252,116,922</u></b>	<b><u>254,035,335</u></b>
<b><u>Unfunded Actuarial Accrued Liabilities</u></b>	<b>\$190,892,685</b>	<b>\$208,068,353</b>

## **Introduction**

This report presents the findings of an actuarial valuation as of January 1, 2010, of Newton Contributory Retirement System.

The actuarial valuation is based on:

- Provisions Chapter 32 of the Massachusetts General Laws, "M.G.L", as of January 1, 2010.
- Employee data provided by the Retirement Board
- Asset information reported to the Public Employee Retirement Administration Commission by the City of Newton Contributory Retirement System
- Actuarial assumptions approved by the Retirement Board

The valuation and appropriation forecast are prepared in accordance with Chapter 32 of the M.G.L. as of January 1, 2010.

The valuation and forecast do not account for:

- Any subsequent changes in the law
- Chapter 32 of the M.G.L., Section 3(8)(c) transfers between systems
- State-mandated benefits
- Cost-of-living increases granted to retired members between 1982 and 1997. The cost of these benefits has been assumed by the State under Proposition Two and One-Half.

### **Actuarial Experience**

In performing the actuarial valuation, various assumptions are made regarding such factors as mortality, retirement, disability, and withdrawal rates as well as both payroll, salary increases, and investment returns. A comparison of the current valuation and the prior valuation is made to determine how closely actual experience corresponded to anticipated occurrences. This analysis of the system provides insight into the overall quality of the actuarial assumptions and helps explain any change in the annual appropriation.

During the last year, the total unfunded actuarial accrued liability increased by 9.0% to \$208,068,353. The increase was larger than expected as a result of net unfavorable actuarial experience during the preceding year, primarily less than expected growth in the actuarial value of assets. Despite a return of 14.79% on market value of assets, the continuing recognition of significant investment losses in prior years limited the return on the actuarial value of assets to 3.87%. The sources of the (gain)/loss are as follows:

Investment	10,256,674
Salary Increases	(3,236,759)
New Participants	1,962,380
Active - Retirements	817,025
Active - Terminations	563,823
Active - Mortality	253,122
Active - Disabilities	1,327,058
Inactive - Mortality and data adjustments	2,048,429
Contribution Gain	(1,046,644)
Other	(541,124)
Total (gain)/loss	12,403,984

## Actuarial Costs and Liabilities:

### Normal Costs

The normal cost is the sum of the individual normal costs determined for each member as if the assumptions underlying the cost determinations had been exactly realized. An individual normal cost represents that part of the cost of a member's future benefits which are assigned to the current year as if the costs are to remain level as a percentage of the member's pay. Benefits payable under all circumstances (i.e., retirement, death, disability, and terminations) are included in this calculation. Anticipated employee contributions to be made during the year are subtracted from the total normal cost to determine employer normal cost. The total normal cost is divided by total payroll to determine the normal cost as a percent of pay. The normal cost is shown in Table I.

**Table I**

	<u>January 1, 2009</u>	<u>January 1, 2010</u>
Superannuation	\$6,702,926	\$6,883,221
Termination	1,351,747	1,414,153
Death	433,523	443,524
Disability	1,394,586	1,402,595
 Total Normal Cost	 9,882,782	 10,143,493
% of Pay	12.1%	12.1%
 Employee Contributions	 6,745,990	 6,958,246
% of Pay	8.2%	8.3%
 Employer Normal Cost	 \$3,136,792	 \$3,185,247
% of Pay	3.8%	3.8%

**Present Value of Actuarial Accrued Liabilities**

The actuarial accrued liabilities (AAL) represents today's value of all benefits based on the past service of the actives and inactive. The AAL can be compared to the assets to determine the funded status of the Plan. The value of these earned benefits is shown in Table II below.

**Table II**

	<u>January 1, 2009</u>	<u>January 1, 2010</u>
Actives		
Superannuations	\$188,982,940	\$191,963,211
Termination	(3,333,119)	(3,455,713)
Death	4,602,792	4,657,219
Disability	11,058,247	11,050,538
Retirees and Inactives		
Retirees and Beneficiaries	189,815,691	203,245,596
Vested	0	0
Terminated (Refund)	3,217,906	3,301,061
Disabled	<u>48,665,150</u>	<u>51,341,776</u>
Total	\$443,009,607	\$462,103,688

### **Present Value of Future Benefits**

The present value of future benefits represents today's value of all benefits earned by the inactive participants as well as all benefits earned and expected to be earned in the coming years by the active participants. The difference between the present value of future benefits and the present value of actuarial accrued liabilities is the value of benefits to be earned in the coming years. The value of the total expected benefits is shown in Table III.

**Table III**

	<u>January 1, 2009</u>	<u>January 1, 2010</u>
Actives		
Superannuation	\$247,845,896	\$252,664,835
Termination	8,138,835	8,634,202
Death	8,285,546	8,448,480
Disability	24,965,855	25,171,695
Retirees and Inactives		
Retirees and Beneficiaries	189,815,691	203,245,596
Terminated (Refund)	3,217,906	3,301,061
Disabled	<u>48,665,150</u>	<u>51,341,776</u>
Total	\$530,934,879	\$552,807,645



## Funded Status and Appropriations:

### Market Value of Plan Assets

The trust fund composition on a market value basis is shown in Table IV.

**Table IV**

	<u>January 1, 2009</u>	<u>January 1, 2010</u>
Cash equivalents	\$4,266,196	\$3,077,464
Real Estate	13,074,523	11,275,898
PRIT Core Fund	184,034,610	208,553,834
Accounts receivable	381,435	372,491
Accounts payable	(63,227)	(11,723)
Accrued income	<u>0</u>	<u>0</u>
Total Market Value	\$201,693,537	\$223,267,964
Total Actuarial Value	\$252,116,922	\$254,035,335

**Actuarial Value of Assets**

For actuarial purposes, the assets are valued using a method which reflects the market value of assets though gradual recognition of any unrealized appreciation or depreciation in assets beyond the 8% return. The following table shows the development of valuation assets:

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(1) Assets for valuation purposes, January 1, 2009	\$252,116,922
(2) Cash flow during year without regard to investment income and expenses	
(a) Benefit payouts and refunds	(\$29,706,505)
(b) City contributions	\$13,283,269
(c) Member contributions	\$7,704,725
(d) Net transfers and reimbursements	<u>\$1,030,867</u>
(e) Net cash flow	(\$7,687,644)
(3) Expected investment income and expenses	\$19,861,848
(4) Preliminary Asset Value (1 + 2 + 3)	\$264,291,125
 (5) Market value, January 1, 2010	 \$223,267,964
(6) Preliminary asset value	<u>\$264,291,125</u>
(7) Unrecognized appreciation (5 - 6)	(\$41,023,161)
(8) Adjustment (7 x 25%)	(\$10,255,790)
 (9) Adjusted asset value (4 + 8)	 \$254,035,335
(10) Assets for valuation purposes, January 1, 2010 (adjusted asset value limited to 120% of market value of assets)	\$254,035,335
 (11) Ratio of actuarial value to market value	 113.8%
 (12) The investment rate of return for year ending, January 1, 2010 (based on the adjusted asset value)	 3.87%

## **Unfunded Actuarial Accrued Liabilities**

Under the Entry Age Normal Actuarial Cost Method, the Actuarial Accrued Liability represents what the accumulated assets would have been as of the valuation date if:

- current plan provisions and assumptions had always been in effect,
- experience conformed exactly to assumptions, and
- the normal cost had been contributed each year since inception.

The actuarial value of the Fund's assets as of the end of the prior year are subtracted from the Actuarial Accrued Liability (AAL) to determine the Unfunded Actuarial Accrued Liability (UAAL) as of the valuation date. Over time, annual pension contributions will accumulate Plan assets equal to the AAL, and the UAAL will be eliminated. Thereafter, annual contributions equal to the normal cost will keep the Plan's assets and liabilities in balance. The UAAL is developed in Table VI.

**Table VI**

	<u>January 1, 2009</u>	<u>January 1, 2010</u>
Actuarial Accrued Liability	\$443,009,607	\$462,103,688
Actuarial Assets	<u>252,116,922</u>	<u>254,035,335</u>
Unfunded Actuarial Accrued Liability	\$190,892,685	\$208,068,353
Funded Status	56.9%	55.0%

## **Appropriations**

The pension appropriation for the upcoming fiscal years have been calculated in accordance with the requirements set forth in Section 22D of Chapter 32 of the Massachusetts General Laws. These amounts were calculated to comply with the June 30, 2040, full funding mandate for all accrued liabilities. The pension appropriation is the sum of the:

- Employer normal cost,
- Increasing amortization of the prior unfunded actuarial accrued liability by June 30, 2038  
\$ 208,068,353 over 28 years with 4.0% increasing payments
- Interest adjusted for payments deposited annually each August 1.

The pension appropriation is shown in Table VII.

**Table VII**

	<u>January 1, 2009</u>	<u>January 1, 2010</u>
Normal cost	\$3,136,792	\$3,185,247
Amortization payment of the prior accrued liability	<u>14,426,424</u>	<u>11,811,967</u>
Total cost	\$17,563,216	\$14,997,214
% of Pay	21.4%	17.9%
Fiscal 2011 cost	\$15,029,827	\$15,029,827
Fiscal 2012 cost	\$15,587,888	\$16,252,351

### **Appropriation Forecast**

The following exhibit forecasts employer and employee contributions over the next 32 years under the adopted funding schedule.

Note that the forecast is based upon an "open group" method. This method assumes that sufficient employees will be hired each year to keep the number constant. The total payroll of the system is expected to increase 4.0% per year. The employee contribution rate is expected to increase to 10.5% by 2028 as members contributing base percentages 5%, 7%, and 8% are replaced by new members, whose base contribution is 9%. Payments are assumed to be made at the beginning of the year.

The employer total cost is expected to increase during the next 28 years until the unfunded liabilities are completely paid off, at which time only the normal cost will remain. The total FYE11 cost represents 17.9% of payroll, decreasing to 14.7% by the time the unfunded liabilities are fully paid off, leaving only a normal cost of 1.7% thereafter. The decrease in the cost as a percentage of payroll is a result of the increase in member deductions.

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**Appropriation Forecast**

Fiscal Year Ending	Employee Payroll*	Employee Contribution	Employer Normal Cost with Interest	Amortization Payments with Interest	Employer Total Cost with Interest	Employer Total Cost % of Payroll	Funded Ratio %**
2011	\$83,843,673	\$6,958,246	\$3,331,504	\$11,698,323	\$15,029,827	17.9	54.8
2012	\$87,616,638	\$7,384,801	\$3,362,779	\$12,889,572	\$16,252,351	18.5	55.4
2013	\$91,559,387	\$7,835,656	\$3,390,122	\$13,405,155	\$16,795,277	18.3	56.1
2014	\$95,679,559	\$8,312,133	\$3,413,117	\$13,941,361	\$17,354,478	18.1	56.7
2015	\$99,985,140	\$8,815,626	\$3,431,316	\$14,499,016	\$17,930,332	17.9	57.4
2016	\$104,484,471	\$9,347,602	\$3,444,242	\$15,078,976	\$18,523,218	17.7	58.2
2017	\$109,186,272	\$9,909,604	\$3,451,382	\$15,682,135	\$19,133,517	17.5	59.0
2018	\$114,099,654	\$10,503,256	\$3,452,191	\$16,309,421	\$19,761,612	17.3	59.8
2019	\$119,234,139	\$11,130,271	\$3,446,083	\$16,961,798	\$20,407,881	17.1	60.8
2020	\$124,599,675	\$11,792,448	\$3,432,435	\$17,640,270	\$21,072,705	16.9	61.8
2021	\$130,206,660	\$12,491,682	\$3,410,581	\$18,345,880	\$21,756,461	16.7	62.9
2022	\$136,065,960	\$13,229,968	\$3,379,808	\$19,079,716	\$22,459,524	16.5	64.2
2023	\$142,188,928	\$14,009,403	\$3,339,360	\$19,842,904	\$23,182,264	16.3	65.5
2024	\$148,587,430	\$14,832,197	\$3,288,427	\$20,636,620	\$23,925,047	16.1	67.0
2025	\$155,273,864	\$15,700,673	\$3,226,149	\$21,462,085	\$24,688,234	15.9	68.5
2026	\$162,261,188	\$16,617,277	\$3,151,606	\$22,320,569	\$25,472,175	15.7	70.2
2027	\$169,562,942	\$17,584,582	\$3,063,821	\$23,213,391	\$26,277,212	15.5	72.0
2028	\$177,193,274	\$18,605,294	\$2,961,753	\$24,141,927	\$27,103,680	15.3	74.0
2029	\$185,166,972	\$19,442,532	\$3,095,032	\$25,107,604	\$28,202,636	15.2	76.0
2030	\$193,499,485	\$20,317,446	\$3,234,309	\$26,111,908	\$29,346,217	15.2	78.2
2031	\$202,206,962	\$21,231,731	\$3,379,853	\$27,156,384	\$30,536,237	15.1	80.4
2032	\$211,306,275	\$22,187,159	\$3,531,946	\$28,242,640	\$31,774,586	15.0	82.7
2033	\$220,815,058	\$23,185,581	\$3,690,884	\$29,372,345	\$33,063,229	15.0	85.1
2034	\$230,751,735	\$24,228,932	\$3,856,973	\$30,547,239	\$34,404,212	14.9	87.5
2035	\$241,135,563	\$25,319,234	\$4,030,537	\$31,769,129	\$35,799,666	14.8	90.0
2036	\$251,986,664	\$26,458,600	\$4,211,911	\$33,039,894	\$37,251,805	14.8	92.5
2037	\$263,326,064	\$27,649,237	\$4,401,447	\$34,361,490	\$38,762,937	14.7	95.0
2038	\$275,175,737	\$28,893,452	\$4,599,512	\$35,735,949	\$40,335,461	14.7	97.5
2039	\$287,558,645	\$30,193,658	\$4,806,490	\$0	\$4,806,490	1.7	100.0
2040	\$300,498,784	\$31,552,372	\$5,022,783	\$0	\$5,022,783	1.7	100.0
2041	\$314,021,229	\$32,972,229	\$5,248,808	\$0	\$5,248,808	1.7	100.0
2042	\$328,152,184	\$34,455,979	\$5,485,004	\$0	\$5,485,004	1.7	100.0

\* Calendar basis

\*\* Beginning of Fiscal Year

**GASB Statements No. 25 and No. 27**

Effective for periods beginning after June 15, 1997, the Governmental Accounting Standards Board (GASB) requires the disclosure of pension related liabilities for public employer financial statements in accordance with Statements 25 and 27. These statements, which replace GASB Statement No. 5, must be adhered to by any public employee retirement system that follows Generally Accepted Accounting Principles (GAAP).

These disclosures are intended to establish a reporting framework that distinguishes between:

- current financial information about plan assets and financial activities,
- actuarially determined information from a long-term perspective,
- the funded status of the plan, and
- progress being made in accumulating sufficient assets to pay benefits when due.

Footnote disclosures required by GASB Statement No. 25 and 27 include a description of the plan, a summary of significant accounting policies, and information about contributions, legally required reserves, and investment concentrations. As a result of the oversight of the Public Employees Retirement Administration Commission (PERAC) and the conversion of unpaid contributions to pension related debt, the Net Pension Obligation (NPO) as required by Statement No. 27 will effectively always be equal to \$0. The required disclosure information is shown in Table VIII.

**Table VIII**

	<u>January 1, 2009</u>	<u>January 1, 2010</u>
(1) Actuarial Accrued Liability	\$443,009,607	\$462,103,688
(2) Actuarial Value of Assets	<u>252,116,922</u>	<u>254,035,335</u>
(3) Unfunded Actuarial Accrued Liability	190,892,685	208,068,353
(4) Funded Ratio (2)/(1)	56.9%	55.0%
(5) Covered Payroll	\$82,013,624	\$83,843,673
(6) UAAL as a percentage of payroll: (3)/(5)	232.8%	248.2%
(7) Annual Required Contribution (ARC)	\$13,547,778	\$15,029,827
(8) Net Pension Obligation	\$0	\$0

**PERAC Annual Statement**  
**APPENDIX PAGE 3**  
**ACTUARIAL VALUATION AND ASSUMPTIONS**

The most recent actuarial valuation of the System was prepared by Buck Consultants as of January 1, 2010.

The normal cost for employees on that date was:	\$6,958,246	8.3% of pay
The normal cost for the employer was:	3,185,247	3.8% of pay
The actuarial liability for active members was:		\$204,215,255
The actuarial liability for retired and inactive members was:		257,888,433
Total actuarial accrued liability:		462,103,688
System assets as of that date:		254,035,335
Unfunded actuarial accrued liability:		\$208,068,353

The ratio of system's assets to total actuarial liability was 55.0%

The principal actuarial assumptions used in the valuation are as follows:

Investment Return:	8.0%
Ultimate Rate of Salary Increase:for Groups 1 & 4	4.75% and 5.25%

**SCHEDULE OF FUNDING PROGRESS**

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (b)	Unfunded Actuarial Accrued Liability (b-a)	Funded Ratio (a/b)	Covered Payroll (c)	UAAL as a percent of Covered Payroll (b-a)/c
01/01/10	\$254,035,335	\$462,103,688	\$208,068,353	55.0%	\$83,843,673	248.2%
01/01/09	252,116,922	443,009,607	190,892,685	56.9%	82,013,624	232.8%
01/01/08	281,114,591	419,000,697	137,886,106	67.1%	79,205,738	174.1%
01/01/07	265,700,539	402,257,645	136,557,106	66.1%	74,197,265	184.0%
01/01/06	253,420,995	382,732,277	129,311,282	66.2%	71,278,135	181.4%
01/01/05	244,266,000	361,080,000	116,814,000	67.6%	69,702,000	168.0%
01/01/04	233,888,000	350,688,000	116,800,000	66.7%	68,327,000	171.0%
01/01/03	227,126,000	338,172,000	111,046,000	67.2%	64,636,000	172.0%
01/01/02	228,239,000	306,123,000	77,884,000	74.6%	61,438,000	127.0%
01/01/01	219,102,000	268,660,000	49,558,000	81.6%	60,769,000	82.0%
01/01/00	201,766,000	256,096,000	54,330,000	78.8%	54,975,000	99.0%

Attach Copy of Current Approved Funding Schedule



## **EXHIBITS**

## Age/Service Distribution with Salary as of January 1, 2010

Attained Age	Average Salary	<5	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40+	Total
< 20	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0
20-24	116	0	0	0	0	0	0	0	0	0	116
	25,729	0	0	0	0	0	0	0	0	0	25,729
25-29	204	28	1	0	0	0	0	0	0	0	233
	34,259	48,747	42,230	0	0	0	0	0	0	0	36,034
30-34	80	74	9	0	0	0	0	0	0	0	163
	40,273	53,743	57,637	0	0	0	0	0	0	0	47,347
35-39	34	61	35	3	0	0	0	0	0	0	133
	35,220	55,152	61,920	65,927	0	0	0	0	0	0	52,081
40-44	43	39	38	17	13	2	0	0	0	0	152
	32,605	52,628	60,349	62,056	60,920	49,670	0	0	0	0	50,619
45-49	51	38	32	18	48	12	0	0	0	0	199
	34,140	45,265	51,409	67,708	61,624	69,871	0	0	0	0	50,861
50-54	45	53	35	18	55	42	13	1	0	0	262
	37,521	40,853	48,274	63,045	61,607	74,136	71,458	55,860	0	0	54,065
55-59	32	48	42	17	29	21	28	24	1	0	242
	38,017	43,490	47,487	47,095	57,790	69,920	67,851	61,042	48,995	0	52,302
60-64	13	26	31	27	15	20	17	22	10	0	181
	41,550	41,648	46,922	48,056	51,386	60,052	63,779	78,062	57,333	0	53,712
65-69	2	9	13	5	17	3	6	1	0	0	56
	35,792	48,731	38,798	32,469	47,755	34,382	55,299	56,251	0	0	44,284
70+	0	0	3	0	5	4	3	1	6	0	22
	0	0	49,007	0	33,388	51,719	34,525	40,411	52,448	0	44,523
Total Employees	620	376	239	105	182	104	67	49	17	0	1,759
Average Salary	33,956	48,545	52,119	55,874	58,043	67,605	64,901	68,059	55,118	0	47,666

## Retiree Distribution as of January 1, 2010

Attained Age	Number of Employees			Total Payments		
	Male	Female	Total	Male	Female	Total
< 20	0	0	0	0	0	0
20-24	0	0	0	0	0	0
25-29	0	0	0	0	0	0
30-34	0	0	0	0	0	0
35-39	2	0	2	19635	0	19635
40-44	0	1	1	0	4,738	4,738
45-49	3	3	6	40,930	42,081	83,011
50-54	7	2	9	226,775	33,338	260,113
55-59	22	23	45	655,135	403,399	1,058,534
60-64	96	52	148	3,726,878	945,279	4,672,157
65-69	96	72	168	3,234,445	1,186,608	4,421,054
70-74	86	91	177	2,812,976	1,507,620	4,320,596
75-79	73	91	164	1,861,153	1,419,209	3,280,362
80-84	86	111	197	1,942,082	1,467,406	3,409,488
85-89	40	109	149	737,555	1,217,259	1,954,814
90-94	13	46	59	213,531	472,437	685,968
95-99	2	19	21	13,193	150,217	163,410
Total	526	620	1146	15,484,290	8,849,591	24,333,881
Average (Age/Payment)	72.5	77.6	75.3	29,438	14,274	21,234
Frequency Percent	45.9	54.1	100	63.6	36.4	100

## Disabled Retiree Distribution as of January 1, 2010

Attained Age	Number of Employees			Total Payments		
	Male	Female	Total	Male	Female	Total
< 20	0	0	0	0	0	0
20-24	0	0	0	0	0	0
25-29	0	0	0	0	0	0
30-34	0	0	0	0	0	0
35-39	0	0	0	0	0	0
40-44	4	0	4	163,555	0	163,555
45-49	5	3	8	158,387	86,802	245,189
50-54	8	2	10	314,483	37,648	352,132
55-59	18	3	21	607,689	105,005	712,694
60-64	31	3	34	1,233,932	84,278	1,318,210
65-69	25	0	25	865,498	0	865,498
70-74	20	2	22	680,281	48,453	728,735
75-79	15	3	18	357,246	62,315	419,561
80-84	8	0	8	172,472	0	172,472
85-89	2	0	2	48,268	0	48,268
90-94	1	0	1	17,271	0	17,271
95-99	0	0	0	0	0	0
Total	137	16	153	4,619,083	424,501	5,043,585
Average (Age/Payment)	65.8	61.7	65.4	33,716	26,531	32,965
Frequency Percent	89.5	10.5	100	91.6	8.4	100

**EXHIBIT 4 - CASHFLOW FORECAST:**

The following is a 30 year forecast of benefit payments net of state reimbursable COLA payments, Contribution Income and Investment Returns.

Plan Year Ending	Benefit Payments	Employee Contributions	Employer Contributions	Investment Returns	Net change in plan assets
2010	\$31,449,470	\$6,958,246	\$15,029,827	\$20,760,391	\$11,298,995
2011	32,994,151	7,384,801	16,252,351	21,002,232	11,645,233
2012	34,568,805	7,835,656	16,795,277	21,925,915	11,988,043
2013	35,951,722	8,312,133	17,354,478	22,887,127	12,602,016
2014	37,308,510	8,815,626	17,930,332	23,901,190	13,338,638
2015	38,691,861	9,347,602	18,523,218	24,975,977	14,154,936
2016	40,050,742	9,909,604	19,133,517	26,120,002	15,112,381
2017	41,311,788	10,503,256	19,761,612	27,347,575	16,300,655
2018	42,567,734	11,130,271	20,407,881	28,673,676	17,644,094
2019	43,729,462	11,792,448	21,072,705	30,114,370	19,250,060
2020	44,879,944	12,491,682	21,756,461	31,687,566	21,055,766
2021	45,899,220	13,229,968	22,459,524	33,414,126	23,204,397
2022	46,836,625	14,009,403	23,182,264	35,319,725	25,674,767
2023	47,600,424	14,832,197	23,925,047	37,433,890	28,590,711
2024	48,334,474	15,700,673	24,688,234	39,786,822	31,841,255
2025	49,017,845	16,617,277	25,472,175	42,406,317	35,477,924
2026	49,646,404	17,584,582	26,277,212	45,323,646	39,539,036
2027	50,277,172	18,605,294	27,103,680	48,570,753	44,002,555
2028	50,763,085	19,442,532	28,202,636	52,174,831	49,056,914
2029	51,257,240	20,317,446	29,346,217	56,187,408	54,593,831
2030	51,632,755	21,231,731	30,536,237	60,652,262	60,787,476
2031	51,908,965	22,187,159	31,774,586	65,621,377	67,674,157
2032	52,182,355	23,185,581	33,063,229	71,146,621	75,213,076
2033	52,336,822	24,228,932	34,404,212	77,284,952	83,581,274
2034	52,448,893	25,319,234	35,799,666	84,099,939	92,769,946
2035	52,530,550	26,458,600	37,251,805	91,656,993	102,836,848
2036	52,654,870	27,649,237	38,762,937	100,023,757	113,781,061
2037	52,558,952	28,893,452	40,335,461	109,280,994	125,950,955
2038	52,388,617	30,193,658	4,806,490	118,304,596	100,916,127
2039	54,146,969	31,552,372	5,022,783	126,424,650	108,852,836

amounts in thousands

## **EXHIBIT 5 – SUMMARY OF PLAN PROVISIONS:**

This summary is prepared in accordance with Chapter 32 as of January 1, 2010, and does not take into account any subsequent changes.

### **1. Administration**

Each of the 107 contributory retirement systems for public employees of the Commonwealth of Massachusetts are guided by the applicable provisions of Chapter 32 of the Massachusetts General Laws and other applicable statutes. Although these boards operate semi-independently, there is a uniform set of rules governing benefits, eligibility, contributions, financing, and accounting.

### **2. Participation**

Participation is mandatory for all full-time employees whose employment commences prior to age 65. Eligibility with respect to part-time, professional, temporary, or intermittent employment is governed by the local board. Membership is optional for certain elected officials, State officials appointed by the Governor, and certain hospital interns.

There are four classes of membership as follows:

- (i) Group 1: Most general employees in State and local government
- (ii) Group 2: Certain specified hazardous duty positions
- (iii) Group 3: State police officers and inspectors
- (iv) Group 4: Local police officers, firefighters, and designated employees of the municipal light department.

For members in more than one group, participation will be proportional.

### 3. **Salary**

Salary is defined as gross regular compensation. Salary does not include bonuses, overtime, severance pay, unused sick leave credit, or other similar compensation.

### 4. **Member Contributions**

Member contributions vary depending upon date hired as follows:

<b><u>Date of Hire</u></b>	<b><u>Member Contribution Rate</u></b>
Prior to 1975	5.0% of Salary
1975 to 1983	7.0% of Salary
1984 to 1996	8.0% of Salary
1996 and Later plus	9.0% of Salary
1979 and Later	2.0% of Salary in excess of \$30,000

### 5. **Average Salary**

Average salary is used to determine a participant's benefit. It is defined as the average salary during the three consecutive-year period that produces the highest average. (Alternatively, if a greater amount results, it is the average rate of salary earned during the period or periods, whether or not consecutive, that constitutes the last three years preceding retirement.)

### 6. **Creditable Service**

In general, creditable service is awarded during the period in which a member contributes to the retirement system.

## **7. Service Retirement**

### **a. Eligibility:**

For an employee to be eligible for service retirement (also referred to as superannuation), one of the following conditions must be met:

- (i) completion of 20 years of service
- (ii) for an employee hired prior to January 1, 1978, attainment of age 55 as an active member
- (iii) for an employee hired on or after January 1, 1978, attainment of age 55 as an active member and completion of ten years of service



b. Benefit Amount:

The retirement allowance is determined as a product of the participant's Benefit Rate times Average Salary times Creditable Service, where Benefit Rate is determined from the following table:

<u>Age at Retirement</u>	<u>Percentage of Average Salary</u>		
	<u>Group 1</u>	<u>Group 2</u>	<u>Group 4</u>
65 or Over	.025	.025	.025
64	.024	.025	.025
63	.023	.025	.025
62	.022	.025	.025
61	.021	.025	.025
60	.020	.025	.025
59	.019	.024	.025
58	.018	.023	.025
57	.017	.022	.025
56	.016	.021	.025
55	.015	.020	.025
54	.014	.014	.024
53	.013	.013	.023
52	.012	.012	.022
51	.011	.011	.021
50	.010	.010	.020
49	.009	.009	.019
48	.008	.008	.018
47	.007	.007	.017
46	.006	.006	.016
45	.005	.005	.015
44	.004	.004	.004
43	.003	.003	.003
42	.002	.002	.002
41	.001	.001	.001

**8. Deferred Vested Retirement****a. Eligibility:**

A participant who has completed ten or more years of creditable service is eligible for a deferred vested retirement benefit. If termination is involuntary, the participant is vested after six years.

**b. Benefit Amount:**

The participant's accrued benefit is payable commencing at age 55, or may be deferred until later at the employee's option.

**c. Refund of Contributions:**

In lieu of the deferred pension benefit, a member may elect to receive a refund of their accumulated contributions. Members with ten or more years of service are entitled to 100% of the credited interest on their contributions. Members with five to ten years of service are entitled to 50% of the credited interest on their contributions. No credited interest is provided for members with less than five years of service.

**9. Accidental Disability****a. Eligibility:**

Participants are eligible for an accidental disability benefit, regardless of service or age, if they become permanently and totally incapacitated for further duty as a result of personal injury sustained while in the performance of duties.

**b. Benefit Amount:**

The accidental disability amount is 72% of annual salary plus \$648.48 per year for each child plus an additional annuity based upon accumulated Member Contributions with credited interest.

**10. Ordinary Disability****a. Eligibility:**

An ordinary disability occurs when a member becomes permanently and totally disabled due to sickness or injury that is not job related. In order to be eligible for an ordinary disability benefit, a member must have ten years of service (and be less than age 55).

**b. Benefit Amount:**

The ordinary disability amount is equal to the accrued retirement benefit as if the member were age 55. If the member was a veteran, the benefit is 50% of the member's final rate of Salary during the preceding 12 months, plus an annuity based upon accumulated Member Contributions plus credited interest. If the participant is over age 55, he will receive not less than the superannuation allowance to which he is entitled.

**11. Survivor Benefits****a. Occupational Death:**

The survivors of a member who dies due to an occupational injury will be entitled to a lump sum return of contributions plus a pension benefit equal to 72% of the participant's annual Salary.

**b. Non-Occupational Death:**

Upon the death of a member other than due to an occupational injury, the designated beneficiary will be entitled to a retirement benefit as if Option C had been elected with a minimum of \$250 per month to the surviving spouse, plus \$120 for the first child, plus \$90 for each additional child. If no beneficiary is designated and if the employee worked two years, and is married at least one year, the spouse may elect benefits. If there is no designated beneficiary or surviving spouse, then member contributions are returned. If there are dependent children but no surviving spouse, they may elect minimum survivor benefits of \$250 per month plus \$120 for the first child and \$90 for each additional child.

c. **Refund of Contributions:**

Upon the death of a member not entitled to survivor benefits, the beneficiary is entitled to a refund of all member contributions with interest.

**12. Cost-of-Living Increases**

In accordance with the adoption of Chapter 17 of the Acts of 1997, the granting of a cost-of-living adjustment will be determined by an annual vote by the Retirement Board. The amount of increase will be based upon the Consumer Price Index, limited to a maximum of 3.0%, beginning on July 1. All retirees, disabled retirees, and beneficiaries who have been receiving benefits payments for at least one year as of July 1 are eligible for the adjustment. The maximum amount of pension benefit subject to a COLA is \$12,000. All COLAs granted to members after 1981 and prior to July 1, 1998 are deemed to be an obligation of the State and are not the liability of the Retirement System.

**13. Postretirement Death Benefits**

Any benefits following the death of a member after retirement are based upon the form of benefit the participant elected at the time of retirement. There are three available forms as follows:

- (i) Option A - Life annuity
- (ii) Option B - Life annuity with death benefit equal to excess of member contributions plus credited interest to retirement over annuity benefit paid to member
- (iii) Option C - Life annuity with  $66\frac{2}{3}\%$  of benefit continued after death of member to designated joint annuitant

## **EXHIBIT 6 – ACTUARIAL METHODS AND ASSUMPTIONS:**

The actuarial cost method, factors, and assumptions used in determining cost estimates are presented below.

### **1. Member Data**

The member data used in the determination of cost estimates consist of pertinent information with respect to the active, inactive, retired, and disabled members of the employer as supplied by the employer to the actuary.

### **2. Valuation Date**

January 1, 2010.

### **3. Actuarial Cost Method**

The costs of the Plan have been determined in accordance with the individual entry age normal actuarial cost method.

### **4. Rate of Investment Return**

It is assumed that the assets of the fund will accumulate at a compound annual rate of 8.0% per annum.

### **5. Salary Scale**

It is assumed that salaries including longevity will increase at 4% per year from 2010 to 2012. Starting in 2013 the annual increases will be 4.75% and 5.25% for groups 1 and 4, respectively.

### **6. Cost-of-Living Increases**

Cost-of-living increases have been assumed to be 3.0% of the lesser of the pension amount and \$12,000 per year.

### **7. Value of Investments**

Assets held by the fund are valued at market value as reported by the Public Employees' Retirement Administration Commission (PERAC). Actuarial assets equal preliminary asset value plus 25% of the difference between market value and preliminary asset value. Preliminary asset value is the previous years' actuarial asset amount increased by net cash flow and expected investment income. The result must be within 20% of market value.

**8. Annual Rate of Withdrawal Prior to Retirement**

Based on an analysis of experience, the assumed annual rates of withdrawal may best be illustrated by the following rates at the following ages:

<u>Service</u>	<u>General Employees</u>	<u>Police and Fire Employees</u>
0	0.1500	0.0150
10	0.0540	0.0150
20	0.0200	0.0000
30	0.0000	0.0000

**9. Annual Rate of Mortality**

It is assumed that both pre-retirement and post retirement mortality are represented by the RP-2000 Mortality Table for males and females. Mortality for disabled members is represented by the RP-2000 Mortality Table set forward two years for all disabled members.

**10. Service Retirement**

Based on an analysis of experience, the assumed annual retirement rates are illustrated at the following ages:

<u>Age</u>	<u>Male General Employees</u>	<u>Female General Employees</u>	<u>Male and Female Police and Fire Employees</u>
45	0.0000	0.0000	0.01000
46	0.0000	0.0000	0.01000
47	0.0000	0.0000	0.01000
48	0.0000	0.0000	0.01000
49	0.0000	0.0000	0.01000
50	0.0100	0.0150	0.02000
51	0.0100	0.0150	0.02000
52	0.0100	0.0200	0.02000
53	0.0100	0.0250	0.05000
54	0.0200	0.0250	0.07500
55	0.0200	0.0550	0.15000
56	0.0250	0.0650	0.10000
57	0.0250	0.0650	0.10000
58	0.0500	0.0650	0.10000
59	0.0650	0.0650	0.15000
60	0.1200	0.0500	0.20000
61	0.2000	0.1300	0.20000
62	0.3000	0.1500	0.25000
63	0.2500	0.1250	0.25000
64	0.2200	0.1800	0.30000
65	0.4000	0.1500	1.00000
66	0.2500	0.2000	1.00000
67	0.2500	0.2000	1.00000
68	0.3000	0.2500	1.00000
69	0.3000	0.2000	1.00000
70	1.0000	1.0000	1.00000

**11. Annual Rate of Disability Prior to Retirement**

Based on an analysis of experience, the assumed annual rates of disability may best be illustrated by the following probabilities at the following ages:

<b><u>Attained Age</u></b>	<b><u>General Employees</u></b>	<b><u>Police and Fire Employees</u></b>
20	0.0001	0.0010
30	0.0003	0.0030
40	0.0010	0.0030
50	0.0019	0.0125

In addition, it is assumed for the general employees that 40% of all disabilities are ordinary (60% are service connected). For police and fire employees, 10% of all disabilities are assumed to be ordinary (90% are service connected).

**12. Family Composition**

It is assumed that 80% of all members will be survived by a spouse and that females (males) are three years younger (older) than members.

**13. Administrative Expenses**

No provision is made for anticipated administrative expenses.



## EXHIBIT 7 – GLOSSARY OF TERMS:

This glossary summarizes the technical terms contained in this report.

### 1. **Actuarial Accrued Liability**

That portion of the Actuarial Present Value of plan benefits that is not provided for by future employer Normal Costs or employee contributions.

### 2. **Actuarial Assumptions**

Assumptions as to the occurrence of future events affecting the Retirement System such as:

- Rates of investment returns
- Increases in a member's salary
- Inflation
- The probability of mortality, turnover, disablement
- Retirement at each age and other relevant items

### 3. **Actuarial Cost Method**

A procedure for allocating the Actuarial Present Value of pension plan benefits between Normal Cost and Actuarial Accrued Liability.

### 4. **Actuarial Present Value**

The single sum amount required at the valuation date that is required to provide for anticipated future events based upon the terms of the plan and the Actuarial Assumptions.

### 5. **Forecast**

A projection of future benefit payments or contribution requirements based upon the terms of the plan, the current asset amounts, the Actuarial Assumptions, and additional assumptions as to the replacement of terminating employees with new employees.

**6. Normal Cost**

That portion of the Actuarial Present Value of future benefits that is assigned to the current year.

**7. Unfunded Actuarial Accrued Liability**

That portion of the Actuarial Accrued Liability that is not provided for by current actuarial value of assets.

**8. Valuation Method**

The method used to divide the cost of future benefits among the Actuarial Accrued Liability, the current year's Normal Costs, and future years' Normal Costs. The resulting current funding requirement is then determined as the current year's Normal Cost plus the payment necessary to amortize the Unfunded Actuarial Liability.

**9. Vested Liability**

That portion of the Actuarial Present Value of Accrued Benefits that a member would be entitled to if the member terminated employment with the employer as of the valuation date.

## **CERTIFICATION:**

This report fairly represents the actuarial position of the City of Newton Retirement System contributing as of January 1, 2010, in accordance with generally accepted actuarial principles applied consistently with the preceding valuation. In our opinion, the actuarial assumptions used to compute actuarial accrued liability and normal cost are reasonably related to plan experience and to reasonable expectations, and represents our best estimate of anticipated plan experience.

Buck Consultants, LLC

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Daniel W. Sherman, ASA, MAAA  
Enrolled Actuary No. 08-4086

August 2010

## **BREAKOUTS**

## Breakouts

Code	Department	Participants	Payroll	Normal Cost	Amortization of Unfunded Liability	FYE 2012 Appropriation
001	M.I.S.	6	\$ 514,013	\$ 7,822	\$ 77,306	\$ 85,128
002	Human Resources	8	575,390	19,404	92,383	111,787
003	Human Services	6	391,242	16,416	75,943	92,359
005	Jackson Homestead	4	190,188	9,952	11,849	21,801
006	Executive	5	478,007	6,631	124,368	130,999
007	Comptroller	5	383,246	15,304	103,637	118,941
008	Retirement	2	178,421	\$ (1,682)	29,910	28,228
009	Assessing	14	986,012	18,845	160,388	179,233
010	Purchasing	6	324,105	12,583	71,532	84,115
011	Treasury	10	526,222	24,665	73,265	97,930
012	Law	10	889,445	8,226	137,124	145,350
013	City Clerk	6	324,311	8,498	28,702	37,200
014	Clerk of the Board	4	243,908	10,057	58,100	68,157
015	Board of Aldermen	15	146,250	12,284	23,469	35,753
016	Building (Group 1)	14	1,193,317	28,168	272,120	300,288
016	Building (Group 2 & 4)	4	216,676	18,914	12,372	31,286
017	Elections	6	355,799	891	97,711	98,602
018	Planning	12	743,721	13,361	102,721	116,082
018F	Community Development	8	519,968	5,777	123,127	128,904
018P	Community Preservation	1	79,935	6,038	948	6,986
019	Fire (Group 2 & 4)	176	11,560,209	866,292	2,267,488	3,133,780
019A	Fire - Civilian Personnel	5	281,685	2,785	60,430	63,215
19S	Fire (Retired under "Starck" Bill)	0	\$ -	\$ -	139,354	139,354
020	Police (Group 2 & 4)	138	10,345,527	689,695	2,112,046	2,801,741
022	Sealer/Weights & Measures	1	65,330	3,139	9,269	12,408

## Breakouts

Code	Department	Participants	Payroll	Normal Cost	Amortization of Unfunded Liability	FYE 2012 Appropriation
020A	Police - Civilian Personnel (Group 1)	34	\$ 1,801,884	\$ 13,661	\$ 149,790	\$ 163,451
021	Police School Traffic Supervisors	15	506,448	19,344	160,263	179,607
023	Inspectional Services (Group 1)	10	668,218	19,499	128,620	148,119
023	Inspectional Services (Group 2 & 4)	2	137,044	8,466	28,474	36,940
025	Health	41	2,234,449	89,883	258,329	348,212
026	Veterans	2	140,025	8,285	45,254	53,539
027	Library	63	3,020,059	102,427	483,665	586,092
028	School Custodian	82	4,145,582	110,190	785,850	896,040
029	School Cafeteria	72	1,413,161	76,700	173,299	249,999
030	School Teacher Aides	590	17,330,489	480,837	689,868	1,170,705
031	School Clerical	121	6,944,108	279,690	1,107,425	1,387,115
031A	School Committee	0	\$ -	\$ -	2,040	2,040
032	Recreation	32	1,946,846	37,387	477,316	514,703
033	Engineering	14	1,046,617	25,326	192,673	217,999
034	Public Works	117	6,152,555	184,135	1,281,234	1,465,369
034A	Storm Water Management	5	269,770	5,168	34,500	39,668
034B	Man Highway Crew	6	256,211	3,409	2,885	6,294
035	Water/Sewer	17	977,056	23,594	132,021	155,615
035S	Sewer Personnel	25	1,178,620	19,617	167,729	187,346
035W	Water Personnel	21	1,021,951	27,717	171,727	199,444
036	Newton Housing Authority	19	1,139,653	23,379	151,048	174,427
<b>TOTAL</b>		1,754	\$ 83,843,673	\$ 3,362,779	\$ 12,889,572	\$ 16,252,351